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PHOTOGRAPHIC INTERPRETATION REPORT

SILO ICBM LAUNCH AREAS
IN THE USSR

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NPIC R-30 63
March 1963

NATIONAL PHOTOGRAPHIC INTERPRETATION CENTER

Declassification review by NIMA/DOD

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INTRODUCTION

Fourteen silo ICBM launch areas, designated Type III, have been identified in the USSR as of [REDACTED]. Two of these areas, Launch Areas D1 and D2 of Launch Complex D at

the Tyura Tam Missile Test Center (TTMTC), are the prototype for this configuration. The remaining 12 silo launch areas are deployed as shown in Table 1.

Table 1. Deployed Type III Launch Areas

Complex	Launch Area	Coordinates	Orientation of Short Axis of Excavation
Yurya	Launch Area F	59-22N 49-17E	20 200
	Launch Area G	59-04N 49-52E	20 200
Verkhnyaya Salda	Launch Area F	58-14N 60-41E	45 225
	Launch Area G	58-13N 60-49E	45 225
Shadrinsk	Launch Area A	56-09N 63-52E	60 240
	Launch Area B	56-10N 64-03E	60 240
Omsk	Launch Area A	55-09N 73-38E	5 185
	Launch Area B	55-11N 73-33E	5 185
Novosibirsk	Launch Area B	55-19N 83-01E	65 245
	Launch Area C	55-23N 82-56E	65 245
Plesetsk	Launch Area C	63-01N 40-52E	10 190
Kostroma	Launch Area E	57-57N 41-13E	10 190

Each of these launch areas is road served only and, when complete, will contain two missile silos (Figure 1). None of the launch areas is considered complete, but, as expected, the prototype areas at the TTMTC are the farthest advanced in construction. The earliest date that construction activity on a deployed launch area of this type appeared on photography was [REDACTED]. However, construction was begun on a prototype area prior to the coverage of the TTMTC in [REDACTED].

The Omsk and Shadrinsk complexes are unique in that they contain only Type III launch areas. All other Type III launch areas are located at complexes also containing Type II launch areas. No Type III launch areas have been identified at complexes containing Type IV launch

areas with the exception of the Plesetsk complex, which has an example of all known configurations of deployed launch areas.

All Type III launch areas identified to date exhibit the same basic construction characteristics. Difficulties in interpretation arise because of the varying stages of construction of individual launch areas, the quality and small scale of the photography, and modifications in construction practices caused by terrain or changes in design. In many instances, measurements and details derived from one mission cannot be confirmed on another mission, because of the limiting factors mentioned above.

The Type III launch areas at deployed complexes generally are located in wooded areas. The average size of the secured area is about

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1,600 by 1,400 feet. The most obvious indicator of a launch area in an early stage of construction is an excavation 500 to 600 feet long and 150 to 200 feet wide with a notch, or cutout, about 200 by 150 feet nearly centered along one side. This notch eventually will contain the control bunker and the excavation will contain the missile silos.

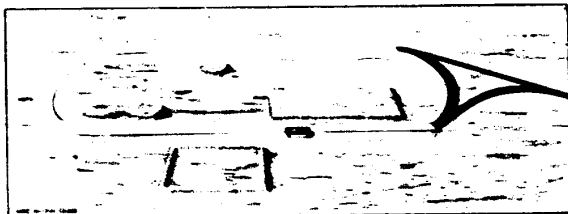


FIGURE 1. REPRESENTATIVE EXAMPLE OF A COMPLETED TYPE III LAUNCH AREA.

The missile silos appear as two prominent objects along the approximate center line paralleling the long axis of the excavation. These objects are visible as the excavation is back-

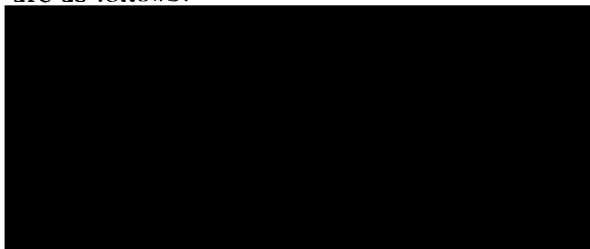
filled, but in no instance can the actual shape, round or square, be determined conclusively. On the basis of a comparison of all photography of all Type III launch areas, these silos measure about 60 to 70 feet across and about 200 feet apart center to center.

During both the excavating and the backfilling, small indistinct images are visible within the excavation. These images may be attributed to either construction material or equipment, spoil piles, or operational support items under construction. Some of these vague images may be the same ones that are visible, in addition to the tops of the silos, when backfilling is complete.

The control bunker is constructed in the notch and appears to be a concrete structure about 120 feet square. The control bunker is also covered over when the backfilling reaches grade level and, in fact, is mounded in the final stage. The entrance to the control bunker is on the side opposite the silos. The control bunker almost always is located on the side opposite the most likely direction of fire.

PROTOTYPE LAUNCH AREAS

The dates and quality of the photographic coverage of the prototype Type III launch areas are as follows:



Launch Complex D of the TTMTC was first identified on photography of [REDACTED]. At that time, a road from Complex C was under

construction toward the new complex, and one area (D1) was being excavated to an undetermined depth. Three support buildings were located east of the excavation. Photography of [REDACTED] showed continued construction at Area D1 and the start of construction activity at Area D2. Photography of [REDACTED] revealed continuing construction at both areas, and that of [REDACTED] revealed a bunker and two objects -- the silos -- about 200 feet apart in the excavation at Area D1, and the road to Area D2. Photography of [REDACTED] revealed that much of the excavation at Area D1 had been backfilled and that an earth mound had been positioned over the control bunker. An entrance to the bunker was

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located in the middle of the mound away from the down-range side of the filled excavation. On top of the mounded bunker near the southeast end was an unidentified object 50 feet across. A probable parking or service area had been prepared in front of the entrance to the control bunker. The two silos were still visible, even though the outline of the rectangular excavation had been obliterated by backfilling. The entrance service road appeared to line up with the silos. As of [REDACTED] a third object was positioned in line with and about 200 feet from one of the silos. Although this object was not visible when the excavation was open, its location is about the same as that of the "dome" at Launch Area A at Shadrinsk.

On [REDACTED] the excavation at Launch Area D2 was visible for the first time. The excavation was identical in size and orientation to that at Area D1 and already contained the control bunker and one possible silo. The same photo coverage revealed that four additional support buildings had been constructed between the launch areas, bringing the total to seven. These structures range in size from 30 feet square to 100 by 30 feet and probably are associated with construction support. Two additional buildings, one 50 feet square and one 100 by 40 feet, are located south of and adjacent to Launch Area D1. Both buildings are located beside and parallel to the entrance service road. [REDACTED]

Three stages of construction of Launch Complex D at the TTMT are shown in Figure 2.

Photography of [REDACTED] revealed that Area D1 was nearing completion (Figure 2). A final road configuration was beginning to appear, and the backfilled area surrounding the two silos was being graded. The third object was still visible in the graded area but was too indistinct to be interpreted.

On the same photography the two silos ap-

pear vaguely square and measure approximately 60 to 80 feet on a side. Apparently, the opening of the silo is flush with the graded surface because a shadow at one of the silos does not appear to be cast by an aboveground structure. The shadow apparently is cast into the opening by the edge of the silo that is flush with the surface being graded.

[REDACTED] A building 200 by 70 feet and an associated parking apron were located just inside the security fence that was barely visible on two and possibly three sides of Launch Area D1.

On the same photo coverage, construction of Launch Area D2 had progressed to the extent that the two silos and the control bunker were visible. The silos measured 230 feet apart, and the control bunker measured 145 by 100 feet. Neither the security fence nor the access road was apparent at that time.

No significant change was noted on the [REDACTED] photography of either launch area. Road surfacing was still incomplete at Launch Area D1, and the two silos and the unidentified object were still visible. Northwest of the control bunker and just inside the security fence was an area 200 feet on a side with dark toning in the center indicating possible paving.

Coverage of Complex D on [REDACTED] showed continued construction activity at both launch areas. Launch Area D1 appeared to be in the final stages of construction. The shape of the two silos was still indistinct; however, they measured approximately 50 feet across and 200 feet apart. At that time, shadows apparently cast by the silos indicated that a portion of each extended approximately 10 feet above ground level. This apparent aboveground portion of the silos may represent scaffolding over the silos, a part of the silo mechanism, or the open doors of the silos. No objects were visible in the area of the

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FIGURE 2. COMPLEX D, TTMT.

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backfilled excavation, which appeared to be level and smooth but not surfaced. Other features within the partly fenced launch area were the earth-covered control bunker, two buildings, a small mound, and a parking hardstand. To the rear of the control bunker were two small unidentified objects and the square feature reported in [REDACTED] as possibly paved. On the [REDACTED] photography this feature appeared as a square earth embankment.

On [REDACTED] the two silos, the control bunker, and several small objects or piles of construction material were evident in the excavation at Launch Area D2 (Figure 2). Construction roads were present at both ends of the excavation. To the rear of the control bunker were two unidentified objects and a poorly defined square area or structure similar to those identified at Launch Area D1 on earlier coverage.

DEPLOYED LAUNCH AREAS

The first identification of a deployed Type III ICBM launch area occurred in [REDACTED]. At that time, the configuration of the launch areas at the Shadrinsk complex was identified as being different from that observed at any other known ICBM complex. After the identification of the first Type III launch area, previous photography of existing ICBM complexes was reviewed and additional Type III launch areas were observed under construction at other locations as early as [REDACTED].

LAUNCH AREAS E AND G, YURYA

The dates and quality of photographic coverage of the Type III launch areas at the Yurya complex are as follows:



Construction activity, consisting of earth scarring and a few buildings, was visible at both hardened launch areas as early as [REDACTED].

This is the earliest date on which any evidence of a deployed, hardened launch area appeared on photography.

Launch Area E was identified on photography of [REDACTED]. At that time, a notched excavation within a double-fenced area was apparent. The excavation was about 430 by 140 feet with a notch measuring 260 by 120 feet on the south side. The secured area was irregularly shaped and measured about 1,550 feet east-to-west, about 1,600 feet across the west end, and about 710 feet across the east end. No objects were visible in the excavation on the [REDACTED] photography.

Photography of [REDACTED] revealed backfilling in progress, but cloud shadow obscured details within the excavation. Two or three small buildings were located within the fenced area near the entrance, and a clearing containing an unidentified object was just inside the north side of the secured area.

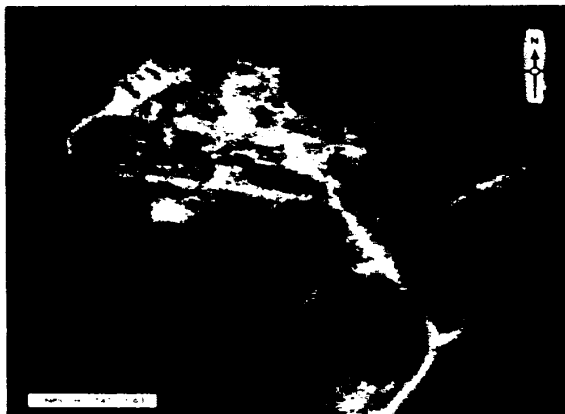
On photography of [REDACTED] it appeared as if the pattern of a completed hardened launch area was starting to emerge (Figure 3). Backfilling apparently was still not complete, because the excavated area still appeared to be below ground level and the surface of the backfill was very uneven.

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A hard-surfaced road had been constructed since [REDACTED] along the south side of the excavation. A short branch from this road apparently serves the control bunker. At the west end of the excavation the road curves to the north to serve a large hardstand containing three buildings. Two of these buildings are approximately 110 feet long and are about 110 feet apart. The third, a small square building, is located between the two larger ones. The road continues past the hardstand and terminates adjacent to what appears to be the west silo.



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FIGURE 3. LAUNCH AREA E, YURYA [REDACTED]

Southwest of the control bunker and across the road is a rectangular clearing that possibly contains a small building. Between this clearing and the road is an unidentified feature having a craterlike appearance. This feature appears to be above ground level and is approximately 60 to 80 feet across.

Just to the southeast of the excavation, the road into the launch area branches. The northern branch curves around the eastern end of the excavation and serves the small clearing containing the unidentified object near the northern fence.

The eastern silo does not appear to be road served, although the appearance of the area indicates that construction is not yet complete.

The launch support facility, located about 3,000 feet south of the excavation, consists of 4 large buildings and 19 barracks-type buildings. All these buildings, except for two of the large ones, are in a line along the east side of and at right angles to the access road to Launch Area E.

Launch Area G was identified on photography of [REDACTED] the area was fenced and trees had been cleared from the site of the excavation, and on [REDACTED] some initial activity was observed. The secured area measures about 1,800 by 1,400 feet. The excavation noted on the photography of [REDACTED] measured 600 by 200 feet with a notch on the south side measuring 170 by 130 feet. The bottom of the excavation appeared irregular and an earth-removal conveyor was visible on the north side. Spoil from the excavation was being dumped outside the security fence to the northeast. No silos or related objects were visible in the excavation.

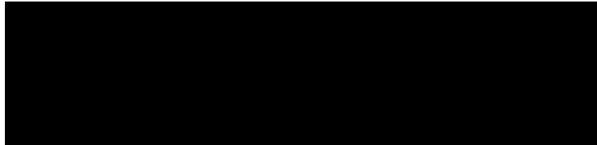
Photography of [REDACTED] did not provide additional information on Launch Area G.

The launch support facility for Launch Area G is located 3,300 feet northwest of the launch area in a clearing on the northeast side of the complex main road. It contains about 23 buildings, 14 of which are barracks-type buildings. One large building and six small, square buildings are located on a short road that runs south from the barracks buildings. One other building, about the same size as a barracks, is set off to the southeast of the barracks buildings.

LAUNCH AREAS F AND G, VERKHNYAYA SALDA

The dates and quality of photographic coverage of the Type III launch areas at the Verkhnyaya Salda Complex are as follows:

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Launch Areas F and G were identified on photography of [REDACTED]. At that time, Launch Area F consisted of a characteristic notched excavation containing a control bunker 100 feet square and two silos, each 60 to 70 feet across and 200 feet apart center to center. Launch Area G was in a much earlier stage of construction and consisted of a clearing and the start of an excavation.

bunker was no longer visible, although the two silos and the wall, which were level with the grade of the backfill, could be identified. A third object was barely discernible between the two silos. No apparent change was noted at Launch Area C.

Photography of [REDACTED] revealed no change in Launch Area F; however, at Launch Area G the notched part of the excavation was barely visible. One of the two silos may also have been under construction.

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LAUNCH AREAS A AND B, SHADRINSK

The dates and quality of photographic coverage of the Type III launch areas of the Shadrinsk Complex are as follows:

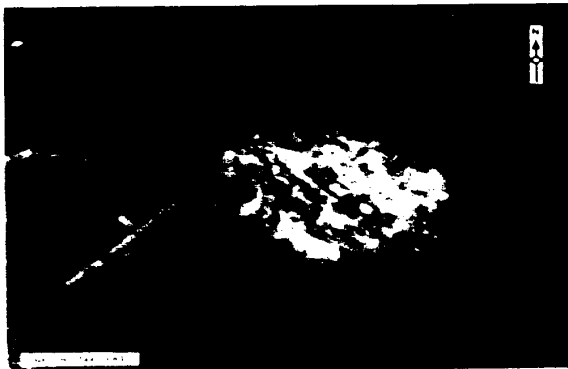


FIGURE 4. LAUNCH AREA F, VERKHNYAYA SALDA

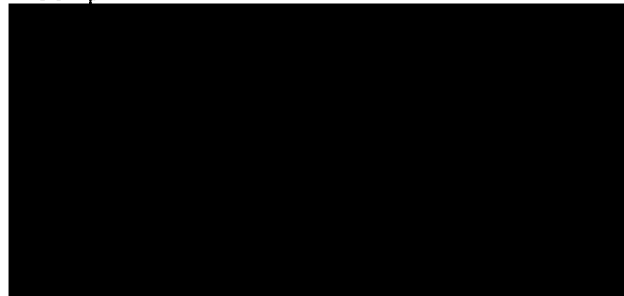
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On [REDACTED] the two silos in Area F appeared to be 70 feet square (Figure 4). A probable concrete wall 300 feet long, 10 to 15 feet thick, and as high as the two silos had been constructed between the silos and the control bunker. Backfilling had taken place around the silos and up to the wall. Excavation was continuing at Area G as of this date. No other identifying features were visible.

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On photography of [REDACTED] Launch Area F had been completely backfilled. The control



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After repeated coverages of Launch Area A at Shadrinsk, several items have been noted that are not consistent with what has been found at the majority of the other silo launch areas.

The shape of a structure observed in the southern end of the excavation at Area A on photography of [REDACTED] is unlike those found at other hardened areas. This structure appears to be T-shaped with the bar extending across the entire width of the excavation and the stem paralleling the long axis of the excavation. The bar is approximately 150 by 45 feet and the stem 90 by 45 feet. On this photography, the control bunker, 105 by 120 feet, was visible in the notch of the excavation.

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A pattern of four small ground scars was observed 4,100 feet south of the excavation at Area A on photography of [REDACTED]

[REDACTED] These scars were not present on photography of [REDACTED] On photography of [REDACTED] they were observed as small clearings that could form the extremities of a possible plus configuration 300 feet across, but no connecting scars were visible. On photography of [REDACTED] the installation had been secured by a fence 500 feet square.

An elliptical, dome-shaped object located at the north end of the excavation has no counterpart at any of the other known Type III launch areas. This object was observed initially on photography of [REDACTED] and again on that of [REDACTED]

Except for the above, only a small amount of information can be added about Launch Area A in addition to what has appeared in previous reports. The fence securing the area appeared complete on photography of [REDACTED] An L-shaped pattern of scarring extending northwest from the secured area has been identified as possible ditching for drainage. No change in the number of structures in the launch area could be determined, but the number of buildings in the support area had been increased to 16. Backfilling had not begun as of the most recent coverage.

Photography of [REDACTED] revealed that work on the excavation at Launch Area B was continuing and that it was beginning to take on the characteristic shape of this type of facility. A structure measuring 160 by 150 feet possibly was under construction in the notched part of the excavation.

[REDACTED] A pattern of ground scarring roughly similar to that at Launch Area A was located northwest of the excavation and was identified as possible ditching for drainage purposes.

Launch Area B was still under construction on photography of [REDACTED] however, no further details of the excavation could be seen. The support area appeared to have no changes.

LAUNCH AREAS A AND B, OMSK

The dates and quality of photographic coverage of the Type III launch areas at the Omsk Complex are as follows:

The complex was identified on photography of [REDACTED] on the basis of a complex support facility. At that time, construction on the launch areas had not started. Launch Area A first appeared on photography of [REDACTED] but no details other than some construction activity were discernible. On photography of [REDACTED] the characteristic notched excavation was present and the launch area had been fenced. The control bunker appeared to be complete in the notched portion of the excavation and measured approximately 200 by 150 feet. Construction activity within the main part of the excavation was not identifiable, because of the small scale of the photography. On the side of the excavation opposite the control bunker is an unexplained, narrow cut or notch not seen at other Type III launch areas. A probable building or structure 200 by 150 feet is located beside this cut.

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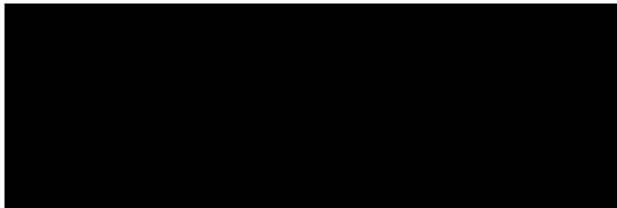
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Two building areas, one of which may serve Launch Area B, and a construction support facility, are located in the immediate vicinity. One of the areas, located 1,500 feet to the south and rear of Launch Area A, contains approximately 5 barracks-type buildings and 5 miscellaneous buildings. The other area, located 4,500 feet southwest of the launch area, contains 9 barracks-type buildings. The construction support facility, located 3,500 feet west of the launch area, contains 17 buildings and an inclined structure that may be a conveyor or rock crusher.

Launch Area B, first seen on photography of [REDACTED] is located approximately 3.5 nm northwest of Launch Area A. Photography of [REDACTED] showed a scarred area apparent at the road terminus. The area was not secured at that time. South of the area of activity were two barracks-type buildings, possibly indicating the location of the future support facility.

LAUNCH AREAS B AND C, NOVOSIBIRSK

The dates and quality of photographic coverage of the Type III launch areas at Novosibirsk are as follows:



Launch Area B was first observed on photography of [REDACTED] At that time it consisted of the characteristic rectangular excavation approximately 490 feet long, 190 feet wide at the south end, and 150 feet wide on the north end. The notched portion of the excavation was centrally located on the west side of the excavation and measured approximately 140 by 135 feet. The control bunker probably was present on

[REDACTED] One probable silo, in the same relative position as those observed at other hardened areas, was apparent on photography of [REDACTED]

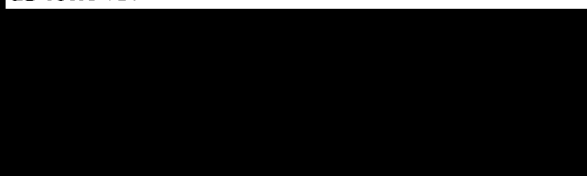
[REDACTED] A single security fence was apparent on photography of [REDACTED]

A launch support facility, located approximately 4,500 feet south of the launch area, contains 10 barracks-type buildings and one large T-shaped building. The quality of the photography of this area is poor and other structures may be present.

Launch Area C, identified on photography of [REDACTED] is in a very early stage of construction. A clearing 600 by 250 feet is located in the center of the launch area, which is probably fenced. The long axis of the clearing is parallel to the excavation at Launch Area B. A probable building is located on the east side of the clearing. There is evidence that a launch support facility containing two buildings is being constructed about 3,000 feet to the east.

LAUNCH AREA C, PLESETSK

The dates and quality of photographic coverage of the Type III launch area at Plesetsk are as follows:



Launch Area C was first seen on photography of [REDACTED] at which time it was snow covered and partly cloud covered. The launch area consisted of an excavation in the center of a cleared area that measured approximately 1,500 by 1,250 feet. A road with wide-turning radii connected the cleared area and an adjacent building area to the complex main road. A service road entered the east end of the excavation.

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The excavation measures approximately 700 to 800 by 200 feet. Within the excavation were two silos and an unidentified object aligned with the long axis of the excavation. One of the silos was about 350 feet from the west end of the excavation and the other about 570 feet from the west end. The unidentified object was located about 95 feet from the east end of the excavation. The distance between the silos is about 220 feet. The eastern silo was the better defined and measured approximately 60 feet on a side. It appeared to be square and to have a flat top. The western silo was more poorly defined but measured about 70 feet square. It was similar in appearance to the other silo, and the difference in size may be due to the poorer definition of the image. The unidentified object appeared to be approximately 50 to 75 feet square.

The west end of the excavation was the better defined and appeared to have square corners. The walls of the excavation could be traced 400 feet on the north side and approximately 530 feet on the south side. The definite line of the north wall terminated at a spoil pile. Another spoil pile was located 150 to 180 feet to the east. No definite edge to the excavation could be traced in the shadow area between the two spoil piles.

Most of the floor of the excavation was dark, possibly caused by shadow. In the light section at the west end, the floor appeared to be level. The other light area at the east end was hazy. Possibly the dark area in the center of the excavation was deeper than the portion at either end. A triangular area at the eastern end of the excavation appears to blend in with the excavation, although it apparently is not lower than the surrounding ground. This area may slope into the excavation. The shape of this area resembles somewhat that of the typical notch of the Type III excavations, but it is located to the east of the two silos. Just south of the western silo and

outside the excavation is a second unidentified object 70 to 80 feet square.

On photography of [REDACTED] which is good but of extremely small scale, the excavation appeared to be partly backfilled. The service road into the excavation extended almost its entire length. The two silos and the unidentified object appeared to extend above the floor of the excavation, but their relative heights could not be determined. A rectangular notch had been excavated south of the more centrally located silo. Centered in the notch was a rectangular building about 100 by 95 feet. The western half of the building appeared to be higher than the other portion. At that time, the adjacent building area contained at least 14 buildings.

Photography of [REDACTED] revealed that further backfilling had taken place. The two silos, the unidentified object, and the building in the notch were still visible, however. Two or three concentric cleared strips, indicating security fencing, extended around the cleared area.

Later photography is of poor-to-fair quality, although that of [REDACTED] showed that the backfilling had reached ground level. The silos, the control bunker, and the unidentified object were all still visible. ®

LAUNCH AREA E, KOSTROMA

The dates and quality of photographic coverage of the Type III launch area at Kostroma are as follows:

[REDACTED]

On photography of [REDACTED] only a road and a clearing were visible at Launch Area E. Snow cover precluded determination of excavation status.

Coverage of [REDACTED] again showed the clearing about 750 feet long and the beginning of

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an excavation approximately 440 feet in length. A line of trees was still evident along the southwestern edge of the excavation where the notch probably would be cut. A clearing south of the excavation contained one structure with a power line connecting to it. No security fencing was evident at that time.

On photography of [REDACTED] construction had continued to the point that the excavation had been squared off at the eastern end. The notch was not yet apparent, although the excavation, containing two objects, had been squared off at the eastern end.

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PHOTOGRAPHY



25X1D

MAPS OR CHARTS

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NPIC. R-83 62, ICBM Launch Complex, Shadrinsk, USSR, Jun 62 (TOP SECRET CHESS RUFF)

NPIC. R-111 62, Hardened or Semihardened ICBM Launch Areas in the USSR, Jul 62 (TOP SECRET RUFF)

NPIC. R-115 62, Current Summary of Soviet ICBM Launch Areas Identified on KEYHOLE Photography, Aug 62
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REQUIREMENTS

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CIA. DDI RR E R-74 62
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